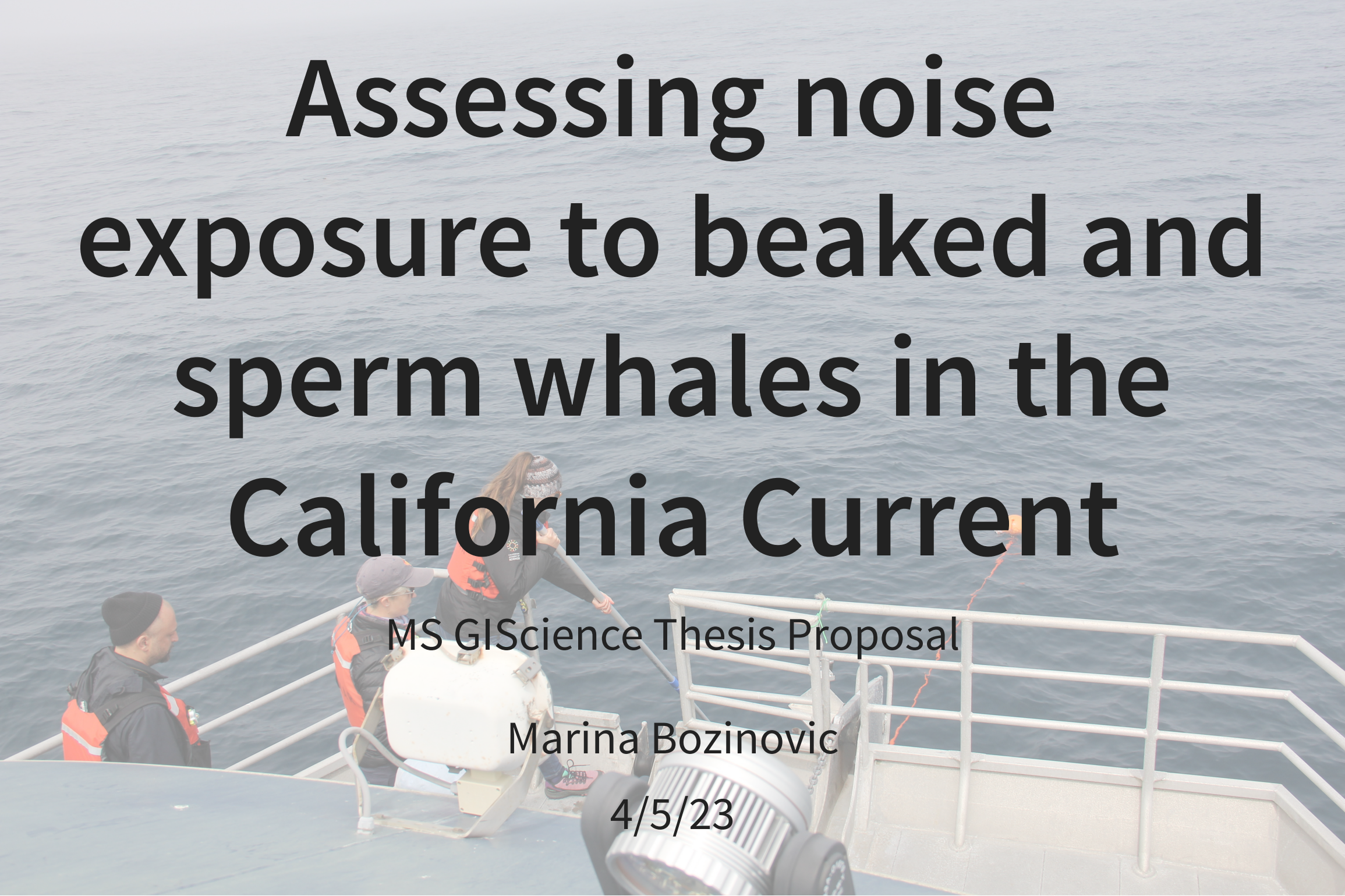
Assessing noise exposure to beaked and sperm whales in the California Current



MS GIScience Thesis Proposal

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Introduction and Background

1. Introduction to the nature of the study
    - Soundscapes/acoustic habitats + human-generate noise
    - Threatened and little-known whale species. Visually cryptic, long dive times make study difficult.
    - Using drifting sensors (buoys) to track this relationship in space and time
    - PAM

Introduction and Background

2. Theoretical framework and literature review

- Framework: Exploratory framework
- Lit review:
  - More noise/increased shipping is expected.
  - Beaked/sperm whale detections are difficult to collect, presence-only
  - Soundscape research is on the rise, acoustic habitat is an parameter to consider in conservation/protected habitat management applications

Introduction and Background

3. Specific research objectives.

- Explore 2018 dataset from CCES survey with soundscape metrics and beaked whale detections.
  - spatial proximity of vessels with high intensity sound events
- Create an open-source, reproducible tool for visualizing noise exposure (broad). This tool can lay groundwork for future hypotheses, better defining conservation priorities (outside the scope of my study) and visualizing events requiring further protection.

Introduction and Background

4. Rationale

- Researchers and managers need a tool to continue to investigate the relationship between human activity and threatened animals as the ocean becomes noisier. Patterns of noise within Sanctuaries is important. Effective for planning “noise-generating activities” (Hooker et al. 2019) around sensitive species.

Method and Materials

Method and Materials

2. Detailed description of methods to resolve research objectives
    - Use RStudio:
        - GOverall, generate map animations
        - Packages: *gganimate,* etc.
        - LOTS of data from CCES_2018, AIS to wrangle
    - Use Github:
        - reproducible code

Projected Results

1. What kind of info will this design acquire?
2. How will you use this info to reach objectives?
3. How will proposed research contribute to knowledge of field?